## CLAIMS

1. A method in connection with programming of an industrial robot, comprising teaching the robot a path having a number of waypoints located on or in the vicinity of an object (3) to be processed by the robot, the method comprising:

- obtaining information about the position of the waypoints in relation to the object,
- storing the information about the position of the waypoints,
- simulating the robot path based on the received information about the waypoints and a model of the robot,
- generating a graphical representation of the robot path based on the simulated robot path, and
- displaying a view comprising the object and said graphical representation of the robot path projected on the object.

2. A method according to claim 1, further comprising:

- obtaining information about tool orientations in the waypoints, and
- generating a graphical representation of the tool orientations in the waypoints.

3. A method according to claim 1 or 2, further comprising:

- obtaining information about the process to be performed by the robot in connection with the robot path,
- simulating the result of the process based upon the obtained information about the waypoints, the obtained information about the process and a model of the process,
- generating a graphical representation of the simulated result of the process, and
- displaying a view showing the graphical representation of the simulated result of the process projected on the object.

4. A method according to claim 3, further comprising:

- obtaining information about which tool to be used to perform the process and about the orientation of the tool in the waypoints,
- simulating the tool performing the process,
- generating a graphical representation of the tool performing the process along the robot path based upon the obtained information about the position of the waypoints, the orientation of the tool, and
- displaying a view showing the tool moving along the robot path performing the process, based on the generated graphical representation of the simulation of the tool performing the process.

5. A method according to any of the claims 3-4, further comprising:
- simulating the quality of the result of the process based on one or a plurality of predefined quality parameters and the model of the process,
- generating a graphical representation of the quality of the result of the process, and
- displaying the view based on the generated graphical representation of the simulation of the quality of the result of the process.

6. A method according to claim 5, further comprising:
- estimating whether the quality of the result does not meet one or several quality requirements, based on said simulation of the quality of the result of the process, and
- generating said graphical representation with a visual warning to the operator where the process quality is estimated not to meet the quality requirements.

7. A method according to any of the previous claims, wherein the view is displayed as a function of time and it is displayed proportional to the robot movements in real-time.

8. A method according to claim 7, further comprising:
- receiving information about a desired speed of the displaying of the view, and
- displaying the view in accordance with the desired speed.

9. A method according to any of the previous claims, further comprising: determining whether a point on the robot path is within the working range of the robot, and notifying the operator if the point is outside the working range of the robot.

10. A method according to any of the previous claims, wherein it comprises obtaining an image of the object, registering the generated graphical representation to the image of the object to provide a composite augmented reality image and displaying said view based on the composite augmented reality image.

11. A method according to claim 10, wherein the image of the object is obtained by means of a camera (8).

12. A method according to any of the previous claims, wherein the steps obtaining and storing information about the position of the waypoints in relation to the object, further comprises:
- obtaining information about the position of a pointing member (1) pointing at points on or in the vicinity of the object,
- determining the position of the points in relation to the object based upon said obtained information,
- storing the point being presently pointed out by the pointing member as a waypoint upon receiving a recording signal.

13. A method according to any of the previous claims, comprising obtaining information about the position of a display member in relation to the object and displaying said view in dependence of the position of the display member in relation to the object.

14. A computer program product directly loadable into the internal memory of a computer, comprising software code portions

for performing the steps of any of the claims 1–13, when said product is run on a computer.

15. A computer readable medium having a program recorded thereon, where the program is to make a computer perform the steps of any of the claims 1–13, when said program is run on the computer.

16. A system for use in connection with programming of an industrial robot, the programming comprises teaching the robot a path having a number of waypoints located on or in the vicinity of an object (3) to be processed by the robot, the system comprising:

- information obtaining means (10), obtaining information about the waypoints of the path in relation to the object,
- a storage unit (16), for storing the obtained information,
- a graphics generator (23), generating a graphical representation, and
- a display member (12;64) displaying a view comprising the object and the graphical representation generated by the graphics generator, characterized in that the system further comprises a simulation unit (18), simulating the robot path based on the obtained information about the waypoints and a model of the robot, that the graphics generator (23), is adapted for generating a graphical representation of the simulated robot path, and that the display member (12), is adapted for displaying a view comprising the object and said graphical representation of the robot path projected on the object (3).

17. A system according to claim 16, characterized in that said information obtaining means (10), is adapted for obtaining information about the process to be performed by the robot in connection with the robot path, the system comprises a second simulation unit (22), simulating the result of the process based upon the obtained information about the waypoints, the obtained information about the process and a model of the process, and

that said graphics generator (2) is adapted for generating a graphical representation of the simulated result of the process.

18. A system according to claim 17, characterized in that said information obtaining means (1), is adapted for obtaining information about which tool to be used to perform the process and about the orientation of the tool in the waypoints, the second simulation unit (22) is adapted for simulating the tool performing the process, and that said graphics generator (23) is adapted for generating a graphical representation of the tool performing the process along the robot path based upon the obtained information.

19. A system according to any of the claims 16-18, characterized in that it comprises a reachability unit (20), determining, based on a model of the robot, whether a waypoint is within the working range of the robot, and notifying the operator if the waypoint is outside the specified working range.

20 A system according to any of the claims 16-19, characterized in that it further comprises a pointing member (1) adapted for pointing out points on or in the vicinity of the object, a position determining means (14), determining the position of said points in relation to the object, and an activating member, storing a point as a waypoint upon activation.

21. A system according to any of the claims 16-20, characterized in that it comprises a camera (8) adapted for delivering an image of the object, and that the display member (12), displays the view based on the generated graphical representation of the simulated robot path and the image of the object.

22. A system according to any claim 21, characterized in that it comprises a registering unit (25), registering the generated graphical representation to the image of the object to provide a composite augmented reality image and the display member

(12) is adapted for displaying a composite augmented reality image.

23. A system according to any of the claims 16-22, characterized in that the display member (12), is adapted for displaying the view as a function of time, which is proportional to the real time it takes for the robot to move through the path.

24. A system according to claim 23, characterized in that it is adapted for receiving information about a desired speed of the displaying of the view in relation to the real time it takes for the robot so move through the path, and the display member (12) is adapted for displaying the view in accordance with the desired speed.

25. A system according to any of the claims 16-24, characterized in that it comprises an object tracking unit (24) adapted for delivering information about the position of the display member (12) in relation to the object (3) and the system is adapted for displaying said view in dependence of the position of the display member in relation to the object (3).

26. A system according to claim 21, characterized in that it comprises a handheld display device (62) comprising the display member (64) and the camera (8).

27. A system according to claim 26, characterized in that the handheld display device is arranged so that the user seems to look directly through the display.

28. Use of the method according to any of the claims 1-13 for a paint application.